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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/686,520

10/16/2003

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23117 7590 01/25/2005

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EXAMINER

KALIVODA, CHRISTOPHER M

ART UNIT

PAPER NUMBER

2883

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/686,520

Applicant(s)

KOCHERGIN ET AL.

Examiner

Christopher M. Kalivoda

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event; however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-61 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-61 is/are rejected.
- 7) ☒ Claim(s) 1-60 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5/28, 12/6, 12/22/04
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Information Disclosure Statement***

There were four references cited on the IDS dated May 28, 2004 that were not considered since they were not in the case. Please see IDS for lined out entries.

In addition, it appears there was a typographical error on the IDS submitted December 6, 2004. U.S. Patent 4,689,021 is directed towards different subject matter and the inventors are not Burrus et al. It is believed this patent should be U.S. Patent 4,689,125 since it is dated August 1987. It was also considered.

Examiner respectfully requests another copy of the missing references.

### ***Claim Objections***

Claims 1-60 are objected to because of the following informalities:

Examiner notes there are many minor informalities in the claims such as:

- a. Claims 1, 19 and 59 are missing a period at the end of the sentence.
- b. In claim 2, line 3, the word "waveguides" should be "waveguide".
- c. In claim 3, line 1, the claim references "semiconductor material" but should reference "porous semiconductor material" to be consistent with claims 2 and 4-6.

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d. In claims 36 and 37, line 1, the word "the" should be deleted.

e. references to "the or said X" throughout but X not previously mentioned. See claim 31, line 2-3 "said pore length" for an example. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-60 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the predetermined spectral wavelength" in lines 8 - 9. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recites the limitation " the characteristic lateral dimension" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claims are 2-60 are also rejected by virtue of dependence upon claim 1.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1, 2, 16 - 23 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feist et al., DE 100 63 151 B4 published June 27, 2002. The English translation used is U.S. Patent Application Publication 2004/0069948. A formal translation has been requested.

Regarding independent claims 1 and 61 as claimed, Feist et al. teach a spectral filter for filtering or transmitting at least one predetermined spectral wavelength band comprising:

A substrate or host wafer having first and second surface (Fig 7b, top and bottom) and further including plural, substantially uniform parallel uncoupled waveguides defined at least partially therethrough (Fig 7b ref sign 15), the plural waveguides defining axes substantially perpendicular to the wafer surface (Fig 7b, ref sign 15 and bottom/top surface) the plural waveguides having coherently modulated cross sections along at least some part of the length of said waveguides (para 0032, last sentence -since they were made by etching and Fig 7b), the plural waveguides supporting at least one waveguide mode at the predetermined spectral wavelength. While the reference does not specifically state supporting at least one mode in the predetermined range, support is inferred since the pores can be used as waveguides (para 0101, last sentence). In addition, the wavelength can be in the green or longer wavelength range since IR is used (para 0019, last sentence).

Regarding claim 2, the host wafer at least partially comprises porous semiconductor material (para 0046, lines1-2 since silicon is used), said semiconductor

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material remaining between the pores serving as waveguides (para 101, last sentence and Fig 7b) while said pores separate neighboring waveguides (Fig 7b).

Regarding claim 16, the waveguides are spatially ordered (Fig 7b) in the plane of the wafer and into a predetermined pattern (para 0097, lines 7-9 and Fig 4, ref signs 25-29).

Regarding claims 17-19, the symmetry is hexagonal (Fig 4, ref sign 25) or cubic (Fig 4, ref sign 28). In addition, the waveguides can be disposed to have complex order having complex symmetry (Fig 4, ref signs 25-27 for unit cell and ref sign 21/22 for pore shape).

Regarding claims 20-21, the pore have substantially circular cross sections (Fig 7b, ref sign 15 or Fig 4, ref sign 16) and can have square cross sections (Fig 4, ref sign 18).

Regarding claim 22, the waveguides have a modulated cross section over at least some part of the length of the waveguides (Fig 7b).

Regarding claim 23, the modulation is periodical with a period from about 50nm to about 20 microns (para 0016, line 1).

### **Allowable Subject Matter**

Claims 3 - 22 and 24-60 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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The following is a statement of reasons for the indication of allowable subject matter: A review of prior art failed to make obvious, disclose or fairly suggest a spectral filter for filtering or transmitting at least one predetermined spectral wavelength band comprising the limitations of each of the dependent claims in addition to the features of independent claim 1.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 5,987,208 to Gruning describes pores etched in a semiconductor material. The pores have a modulated cross section.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Kalivoda whose telephone number is (571) 272-2476. The examiner can normally be reached on Monday - Friday (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR

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only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*cmk*  
cmk

A handwritten signature in black ink, consisting of a stylized, cursive 'A' followed by a long horizontal line.

1/19/2005